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ABSTRACT

The two experiments reported in this study demonstrated that, in contrast to Steinmetz and Battig's (1969) data, preschool children do not display Priority of Recall in Newly Learned Items (PRNI) in either conventional Free Recall Learning (FRL) or in FRL where serial position bias is controlled. This finding, coupled with Battig and Slaybaugh's (1969) report of PRNI in FRL of adults, strongly suggests a developmental strategy interpretation of PRNI which emphasizes that the strategy is in part due to exposure to experiences (e.g., school) encouraging its use. (Author)

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Battig, Allen, and Jensen (1965) have demonstrated that items recalled for the first time (new items) in multitrial free recall learning (FRL) tend to be recalled earlier than previously given items (old items). This finding is in opposition to the widely accepted notion of the strength principle (i.e., in situations where several responses are available, the stronger responses are among the first to occur). Battig, et al. (1965) suggested that priority of recall of newly learned items (PRNI) occurs because Ss adopt an attentional strategy during FRL in which new items are discriminated from old items during list presentation and then are recalled early before they are forgotten. Baddeley (1968), Postman and Keppel (1968), and Shuell and Keppel (1968) later argued that PRNI is a result of a serial-position bias since the unrecalled items are rotated successively into the primacy and recency positions during each list presentation, this favoring their early recall on any particular trial. Subsequently, Battig and Slaybaugh (1969) and Roberts (1969) used FRL procedures that controlled for serial position bias and still obtained PRNI. Thus, studies to date seem to favor a strategy interpretation of PRNI.

It is conceivable that the use of an attentional strategy in FRL might be a relatively sophisticated process developing in individuals in a school environment (i.e., grammar school through college) but not necessarily in preschool children who have had no need to develop complex memorization techniques. Furthermore, one might expect the use of an attentional strategy to show a progressive increase from early childhood through adulthood. Steinmetz and Battig (1969) investigated this hypothesis, examining PRNI in 8 children at each of five age levels (4-5, 6-7, 8-9, 10-11, 12-13). They concluded that PRNI does not increase consistently with age and that even very young children adopt an attentional strategy in FRL. This latter conclusion seems unwarranted since, although the mean PRNI score for all 40 Ss was significant, the mean PRNI scores at each age level did not reach significance. Apart from this, the results of Steinmetz and Battig's study are subject to criticisms. The two main criticisms were mentioned by the authors themselves: 1) There was no control for serial position bias, hence, the PRNI findings could be attributed to a serial position bias; 2) The study departed significantly from the usual FRL procedure in that additional lists were added for subjects who reached criterion on an original list and the lists themselves were mixed, containing both cluster and noncluster items.

The purpose of the two experiments reported in this study was to re-examine the PRNI effect in preschool children controlling for serial position bias and using standard free recall procedures with lists of unrelated words.

EXPERIMENT I. Method: Subjects. Children (10 girls and 11 boys) between the ages of 47 and 79 months (mean age = 64.6 months) in a predominantly middle-class nursery school were used as Ss; none of the Ss had prior experience with verbal learning studies. Materials. Five 12-item recall lists of unrelated words were constructed from a pool of 87 singular monosyllabic nouns which are among (a) the 700 most frequently occurring words of the Rinsland (1945) kindergarten count and (b) the 1,000 most frequently occurring words of the Thorndike-Lorge (1944) G count. Procedure. Each S received one of the five lists. The words of each list were presented orally at a 2-second rate for 7 trials and Ss were allowed unlimited time for free oral recall. Prior to FRL Ss were told: "We are going to play a game with words. I'm going to read some words to you and when I finish, I'll ask you to say them back to me. You can say them in any order. Try to say as many as you can." The control for serial-position bias described by Battig and Slaybaugh (1969) was used. Prior to list presentation on each trial after the first, four items were selected arbitrarily from those recalled on the immediately preceding trial and assigned to the first and last two serial positions. The remaining items were arranged randomly in the middle eight serial positions. In the few cases where less than 4 items were given on a trial, the items were assigned more heavily to the recency positions. None of these items were placed in the same positions on successive trials. Results and Discussion. The basic measure used in this study was the standard recall rank score described by Battig, et al., 1965. For each trial the difference of the new items' recall ranks from the median was summed and divided by the standard deviation of the total number of recall ranks on that trial. A standard recall rank score was then obtained for each S by adding these scores across trials. Using this measure, positive scores reflect earlier than average recall and are evidence of PRNI; negative scores reflect later than average recall and are evidence of priority of recall of old items.

The standard recall rank scores for all new items were negative for 15 Ss and positive for 6; the mean standard recall rank score (-1.721) was significantly less than zero, $t(20) = 2.168$, $p < .05$. A similar analysis was performed on previously correct (PC) items that were not recalled on the immediately preceding trial. The mean recall rank score for the PC items (-1.182) also was significantly less than zero, $t(20) = 3.094$, $p < .01$.

Experiment I was a replication of the Battig and Slaybaugh (1969) FR procedure that controlled for serial position bias since the items in the terminal positions were always old items. Using college students as Ss, Battig and Slaybaugh obtained PRNI for new items. However, the same procedure used with preschool children in Experiment I resulted in primary recall of old items (PROI) both for the new and PC items. Thus, contrary to the findings of Steinmetz and Battig (1969), preschool children, unlike adults, clearly do not use a strategy of concentrating on new items during learning and recalling these items early before they are forgotten. The cause(s) of the PROI (i.e., the strength principle and/or serial position bias) in Experiment I is not clear since old items were always in the favored terminal positions. An experiment to isolate the cause(s) of PROI in preschool children is in progress.

It was possible that the control procedure used in Experiment I caused preschool Ss to respond differently than adults under the same conditions. The purpose of Experiment II was to examine PRNI under conditions enhancing its occurrence, that is, conditions which did not control for serial position bias.

EXPERIMENT II. The Ss were 30 children between the ages of 55 and 77 months (mean age = 67.3 months) who had no experience with verbal learning experiments. These children (15 girls and 15 boys) were selected from two preschool classes at a predominantly middle-class elementary school. The same standard FR procedure used in Experiment I was used with the exception that serial position control was eliminated and the words were given in a random order from trial 1 to trial 7. Results and Discussion. An analysis of variance revealed no significant main or interaction effects due to Es, lists or sex of S. The mean standard recall rank scores for new (+ .305) and PC (+ .029) items, with 15 positive and 15 negative scores each, were not significantly different from zero, $t(29) = .866$, $p > .10$ and $t(29) = .115$, $p > .10$, respectively.

The results of Experiment II (i.e., absence of PRNI in FRL of preschool children even under conditions lacking serial position control) are not in agreement with Steinmetz and Battig's (1969) contention that preschool children adopt an attentional strategy in FRL. Furthermore, the data from Experiment II are not consistent with a position bias interpretation of PRNI which would predict a significant PRNI in both preschool children and adults under usual FRL due to serial position bias.

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